
Project Number: 09166-10

Prepared for:

Fountain People, Inc.

P.O. Box 807

San Marcos, Texas 78667

By

Professional Testing (EMI), Inc.

1601 FM 1460, Suite B

Round Rock, Texas 78664

December 2008

CERTIFICATION
Electromagnetic Interference Test Report
Fountain People, Inc.
Wireless Activator

Table of Contents

| | |
|--|----|
| Title Page | 1 |
| Table of Contents | 2 |
| Certificate of Compliance | 3 |
| | |
| 1.0 Introduction | 4 |
| 1.1 Scope | 4 |
| 1.2 EUT Description | 4 |
| 1.3 Applicable Documents | 4 |
| 1.4 EUT Operation | 5 |
| 2.0 Electromagnetic Emissions Testing | 6 |
| 2.1 Radiated Emissions Measurements | 6 |
| 2.1.1 Test Procedure | 6 |
| 2.1.2 Test Criteria | 6 |
| 2.1.3 Test Results | 7 |
| 3.0 Occupied Bandwidth Measurement | 7 |
| 3.1 Test Procedure | 7 |
| 3.2 Test Criteria | 7 |
| 3.3 Test Results | 7 |
| 4.0 Antenna Requirement | 7 |
| 4.1 Evaluation Procedure | 7 |
| 4.2 Evaluation Criteria | 8 |
| 4.3 Evaluation Results | 8 |
| 5.0 Modifications to Equipment | 8 |
| 6.0 List of Test Equipment | 9 |
| | |
| FIGURES | |
| Figure 1 Radiated Emissions Test Setup | 9 |
| | |
| APPENDICES | |
| Appendix A Emissions Data | 10 |

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF PROFESSIONAL TESTING (EMI), INC.



Certificate Of Compliance

Applicant: Fountain People, Inc.
Applicant's Address: P.O. Box 807
San Marcos, TX 78667
FCC ID: WIM0000010
IC: 7978A-0000010
Project Number: 09166-10
Test Date: December 12, 2008

I, Jason Anderson, Director of Testing Services for Professional Testing (EMI), Inc., being familiar with the FCC and IC rules and test procedures have reviewed the test setup, measured data and this report. I believe them to be true and accurate.

The **Fountain People, Inc., Wireless Activator** was tested to and found to be in compliance with FCC 15.249 and RSS-210 A2.9.

The highest emissions generated by the above equipment are listed below:

| | <u>Frequency (MHz)</u> | <u>Level (dBμV/m)</u> | <u>Limit (dBμV/m)</u> | <u>Margin (dB)</u> |
|--------------------|-------------------------------------|--------------------------------------|--------------------------------------|--------------------|
| Fundamental | 915 | 93.4 | 94.0 | -0.6 |
| Harmonics | 1830 | 61.5 | 63.5 | -2.0 |
| Occupied Bandwidth | 640.6 kHz (20 dB) 647.5 kHz (26 dB) | | | |

Jason Anderson
Director of Testing Services

This report has been reviewed and accepted by Fountain People, Inc. The undersigned is responsible for ensuring that **Fountain People, Inc., Wireless Activator** will continue to comply with the FCC and IC rules.

1.0 Introduction

1.1 Scope

Testing performed on the Fountain People, Inc. Wireless Activator is to support a modular approval for an intentional radiator operating in the United States and Canada under FCC and IC rules respectively. All exhibits including this test report should be used to support the claim of compliance to the appropriate standards shown below.

1.2 EUT Description

The Fountain People, Inc. Wireless Activator is part of a system used to remotely control water features in a water park or playground. In operation, the Wireless Activator is mounted in either ground based housing or in a bollard. Striking the surface of the housing activates the vibration sensor, wakes up the microcontroller and causes the device to transmit its identity code to the Wireless Receiver. It then waits for an acknowledgement and goes back to sleep. The device transmits in the ISM band at 915 MHz. The device employs frequency shift keying to transmit and receive binary data from remote devices. The system tested consisted of the following:

| Manufacturer & Model | FCC ID | IC Number | Description |
|--|---------------|------------------|--------------------|
| Fountain People, Inc., Wireless Activator | WIM0000010 | 7978A-0000010 | Wireless Activator |

1.3 Applicable Documents

| Document | Title | Release |
|-----------------|--|----------------|
| ANSI C63.4 | American National Standard for Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment. | 2003 |
| 47 CFR | Part 15 – Radio Frequency Devices Subpart C -Intentional Radiators | |

1.4 Applicable Rules

| Guidelines | FCC Rules, Part 15 | IC Rules | |
|-----------------------------|---------------------------|--------------------|-------------------|
| | | RSS-GEN Issue 1 | RSS-210 Issue 7 |
| Transmitter Characteristics | 15.249 | 4.1, 4.2, 4.4, 4.9 | A2.9 |
| Spurious Radiated Power* | 15.205, 15.209, 15.249 | 4.2, 4.7 | A2.9, 2.7 Table 2 |
| Powerline Conducted Limit | 15.207 | 4.2, 4.7, 7.2.2 | |
| Antenna Requirement | 15.203 | 7.1, 7.1.4 | |

1.5 EUT Operation

The EUT was operated in continuous transmit mode at max power fsk modulated with a worst case bit pattern to measure fundamental, harmonics, and spurious radiation. The EUT was tested in the absence of any enclosure to support a modular approval in which the device can be operated from any enclosure.

2.0 Electromagnetic Emissions Testing

Measurements were made at the PTI semi-anechoic facility designated Site 45 (FCC 459644, IC 3036B-1) in Austin, Texas. This site is registered with the FCC under Section 2.948 and Industry Canada per RS-212 and is subsequently confirmed by laboratory accreditation (NVLAP). The test site is located at 11400 Burnett Rd., Austin, Texas, 78758 while the main office is located at 1601 N. A.W. Grimes Blvd., Suite B, Round Rock, Texas, 78665. Professional Testing (EMI), Inc. (PTI), follows the guidelines of NIST for all uncertainty calculations, estimates and expressions thereof for EMC testing. The procedure of ANSI C63.4:2003 were utilized for making all emissions measurements.

2.1 Radiated Emissions Measurements

2.1.1 Test Procedure

Radiated emission measurements were made of the Fundamental and Spurious Emission levels for the EUT. The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a motorized turntable which allows 360 degree rotation. For measurements of the fundamental signal, a measurement antenna was positioned at a distance of 3 meters as measured from the closest point of the EUT. The radiated emissions were maximized by rotating the EUT. The fundamental emissions of the device were measured with the antenna of the device in three orthogonal axes.

A pre scan was performed at 10 meters to determine the overall emissions profile emanating from the EUT. Final measurements were taken at 3 meters for compliance with the emission limits.

A Spectrum Analyzer with peak detection was used to find the maximums of the radiated emissions during the variability testing. A drawing showing the test setup is given as Figure 1.

2.1.2 Test Criteria

The table below shows FCC radiated limits for an intentional radiator operating under the provisions of part 15.249. The measurement of the harmonics was performed to 10 GHz. The reference distance for each limit is also shown in this table.

| Frequency MHz | Test Distance (Meters) | Field Strength (dBuV/m)@Test Distance |
|------------------|---------------------------|--|
| 30 to 88 | 3 | 40.0 |
| 88 to 216 | 3 | 43.5 |
| 216 to 960 | 3 | 46.0 |
| 960 and above | 3 | 54 |
| Fundamental | 3 | 94 |
| Harmonics | 1 | 63.5 |

Note: Fundamental Limit is expressed in Quasi Peak field strengths. Harmonics are expressed as Average limits. The spurious limits are expressed in Quasi-Peak.

2.1.3 Test Results

The radiated test data for the fundamental is included in Appendix A. Peak detection was used during the test for the fundamental and harmonics. Quasi-Peak detection was used for spurious emissions below 1 GHz. The radiated emission test data is included in Appendix A. The radiated emissions generated by the Wireless Activator are below the FCC and IC limits.

3.0 Occupied Bandwidth Measurement

3.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the floor. The occupied bandwidth was based on a 20 dB and 26 dB criteria (20 dB and 26 dB down either side of the emission from the peak emission). A drawing showing the test setup is given as Figure 1.

3.2 Test Criteria

According to FCC Part 15.249, the emission must remain in the defined band.

3.3 Test Results

The occupied bandwidth test data is included in Appendix A. The maximum occupied bandwidth for the fundamental frequency 915 MHz is 640.6 kHz (20 dB) and 647.5 kHz (26 dB). This occupied bandwidth complies with the FCC and IC requirement.

4.0 Antenna Requirement

An analysis of the Wireless Activator was performed to determine compliance with FCC Section 15.203. This section requires specific handling and control of antennas used for devices subject to regulations.

4.1 Evaluation Procedure

The structure and application of the Wireless Activator was analyzed with respect to the rules. The antenna is an internal antenna, and is not accessible to the user. An auxiliary antenna port is not present.

4.2 Evaluation Criteria

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

- (a) Antenna must be permanently attached to the unit.
- (b) Antenna must use a unique type of connector to attach to the EUT.
- (c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

4.3 Evaluation Results

The Wireless Activator meets the criteria of this rule by virtue of having an internal antenna inaccessible to the user. The EUT is therefore compliant.

5.0 Modifications to Equipment

No modifications were made to the EUT.

6.0 List of Test Equipment

A list of the test equipment utilized to perform the testing is given below. The date of calibration is given for each.

Conducted Test Equipment

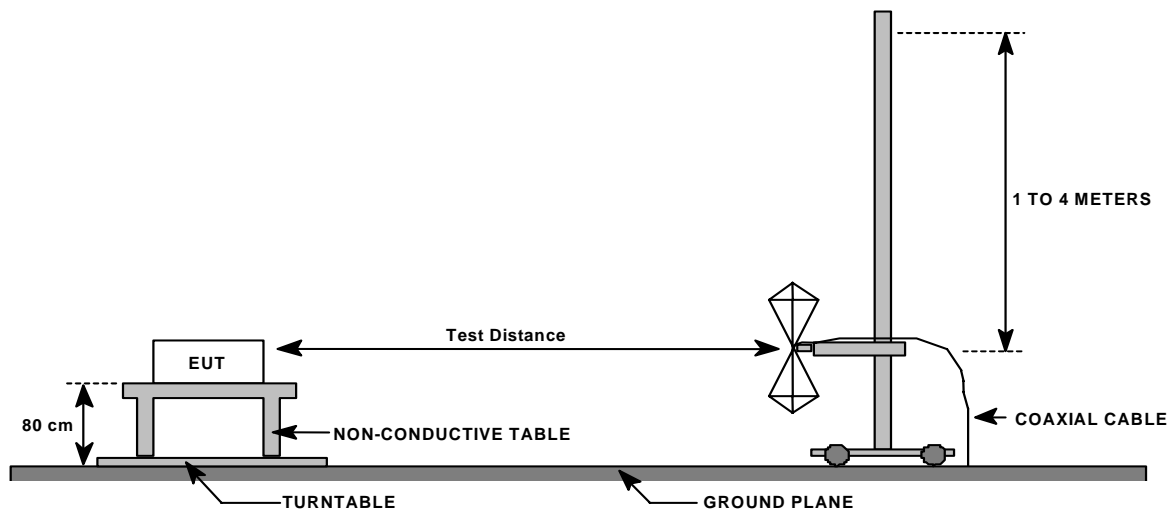
| Asset # | Manufacturer | Model # | Description | Calibration Due |
|---------|--------------|------------|--------------------------------------|--------------------|
| 0939 | HP | 85650A | Quasi-peak Adapter | July 7, 2009 |
| 1629 | HP | 85662A | Spectrum Analyzer Display | NCR |
| 1145 | HP | 8568B | Spectrum Analyzer | July 7, 2009 |
| 1086 | PTI | PTI-ALF2 | Attenuator, Limiter, Filter | March 26, 2009 |
| 1185 | Emco | 3825/2 | Line Impedance Stabilization Network | September 13, 2009 |
| 81 | ELGAR | 1751SL | AC Power Supply | NCR |
| 1173 | PTI | 100KHz HPF | High Pass Filter | March 26, 2009 |

Radiated Test Equipment

| Asset # | Manufacturer | Model # | Description | Calibration Due |
|---------|--------------|---------|---------------------------------------|------------------|
| 0275 | HP | 85650A | Quasi-peak Adapter (high band) | July 03, 2009 |
| 1273 | HP | 85662A | Spectrum Analyzer Display (high band) | NCR |
| 84 | HP | 8566B | Spectrum Analyzer (high band) | March 14, 2009 |
| 0990 | HP | 85685A | RF Preselector (high band) | March 18, 2009 |
| 1239 | HP | 85650A | Quasi-peak Adapter (low band) | January 22, 2009 |
| 1274 | HP | 85662A | Spectrum Analyzer Display (low band) | NCR |
| 1270 | HP | 8568B | Spectrum Analyzer (low band) | January 22, 2009 |
| 1035 | HP | 85685A | RF Preselector (low band) | January 22, 2009 |
| 1453 | HP | 8447D | RF Preamplifier | June 23, 2009 |
| 1389 | Emco | 3108 | Biconical Antenna | April 16, 2009 |
| 1486 | Emco | 3147 | Log Periodic Dipole Array Antenna | April 16, 2009 |
| C026 | none | none | Coaxial Cable (low band) | July 02, 2009 |
| C027 | none | none | Coaxial Cable (high band) | July 02, 2009 |

| Asset # | Manufacturer | Model # | Description | Calibration Due |
|---------|--------------|-----------------|-----------------------------------|--------------------|
| 0582 | EMCO | 3115 | Ridge Guide Antenna | September 30, 2009 |
| 1529 | Miteq | Antenna Mounted | Microwave Preamplifier (preamp 1) | June 30, 2009 |
| 84 | HP | 85666B | Spectrum Analyzer | March 14, 2009 |
| 83 | HP | 8566B | Spectrum Analyzer Display | NCR |
| 1530 | Miteq | None | Microwave Preamplifier (preamp 2) | June 30, 2009 |
| C030 | None | None | Coaxial Cable (MRE band) | June 30, 2009 |

FIGURE 1: Radiated Emissions Test Setup



APPENDIX A EMISSIONS DATA SHEET

**Radiated Data Sheet
Fundamental
Fountain People, Inc.
Wireless Activator**

MEASUREMENT DISTANCE (m): 3
DETECTOR FUNCTION: Peak
RBW: CISPR 120 kHz
VBW: 1 MHz

DATE: December 12, 2008
PROJECT #: 09166-10

Vertical

| Frequency (MHz) | EUT Direction (degrees) | Antenna Elevation (Meters) | Recorded Level (dBuV) | Amplifier Gain (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Corrected Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|-------------------------|----------------------------|-----------------------|---------------------|-----------------------|-----------------|--------------------------|----------------|-------------|
| 915 | 320 | 1 | 64.7 | 0.0 | 23.4 | 5.3 | 93.4 | 94 | -0.6 |

Horizontal

| Frequency (MHz) | EUT Direction (degrees) | Antenna Elevation (Meters) | Recorded Level (dBuV) | Amplifier Gain (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Corrected Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|-------------------------|----------------------------|-----------------------|---------------------|-----------------------|-----------------|--------------------------|----------------|-------------|
| 915 | 204 | 1.3 | 54.6 | 0.0 | 23.4 | 5.3 | 83.3 | 94 | -10.7 |

Note: Prescan performed at 10 meters. Final compliance data taken at 3 meters.

Radiated Data Sheet
Spurious/Harmonics <1 Ghz
Fountain People, Inc.
Wireless Activator

MEASUREMENT DISTANCE (m): 3
DETECTOR FUNCTION: Peak
RBW: CISPR 120 kHz
VBW: 1 MHz

DATE: December 12, 2008
PROJECT #: 09166-10

Vertical

| Frequency (MHz) | EUT Direction (degrees) | Antenna Elevation (Meters) | Recorded Level (dBuV) | Amplifier Gain (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Corrected Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|-------------------------|----------------------------|-----------------------|---------------------|-----------------------|-----------------|--------------------------|----------------|-------------|
| 100 | Noise | Floor | 35.1 | 25.4 | 9.0 | 1.0 | 19.6 | 43.5 | -23.9 |
| 200 | Noise | Floor | 38.7 | 36.0 | 10.9 | 1.9 | 15.5 | 43.5 | -28.0 |
| 300 | Noise | Floor | 34 | 36.5 | 13.9 | 2.5 | 13.9 | 46 | -32.1 |
| 400 | Noise | Floor | 32.8 | 36.6 | 16.6 | 3.0 | 15.8 | 46 | -30.2 |
| 500 | Noise | Floor | 32.3 | 36.6 | 18.9 | 3.4 | 17.9 | 46 | -28.1 |
| 600 | Noise | Floor | 32.5 | 36.6 | 19.7 | 3.7 | 19.4 | 46 | -26.6 |

Horizontal

| Frequency (MHz) | EUT Direction (degrees) | Antenna Elevation (Meters) | Recorded Level (dBuV) | Amplifier Gain (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Corrected Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|-------------------------|----------------------------|-----------------------|---------------------|-----------------------|-----------------|--------------------------|----------------|-------------|
| 100 | Noise | Floor | 35.1 | 25.4 | 9.0 | 1.0 | 19.6 | 43.5 | -23.9 |
| 200 | Noise | Floor | 38.7 | 36.0 | 10.9 | 1.9 | 15.5 | 43.5 | -28.0 |
| 300 | Noise | Floor | 34 | 36.5 | 13.9 | 2.5 | 13.9 | 46 | -32.1 |
| 400 | Noise | Floor | 32.8 | 36.6 | 16.6 | 3.0 | 15.8 | 46 | -30.2 |
| 500 | Noise | Floor | 32.3 | 36.6 | 18.9 | 3.4 | 17.9 | 46 | -28.1 |
| 600 | Noise | Floor | 32.5 | 36.6 | 19.7 | 3.7 | 19.4 | 46 | -26.6 |

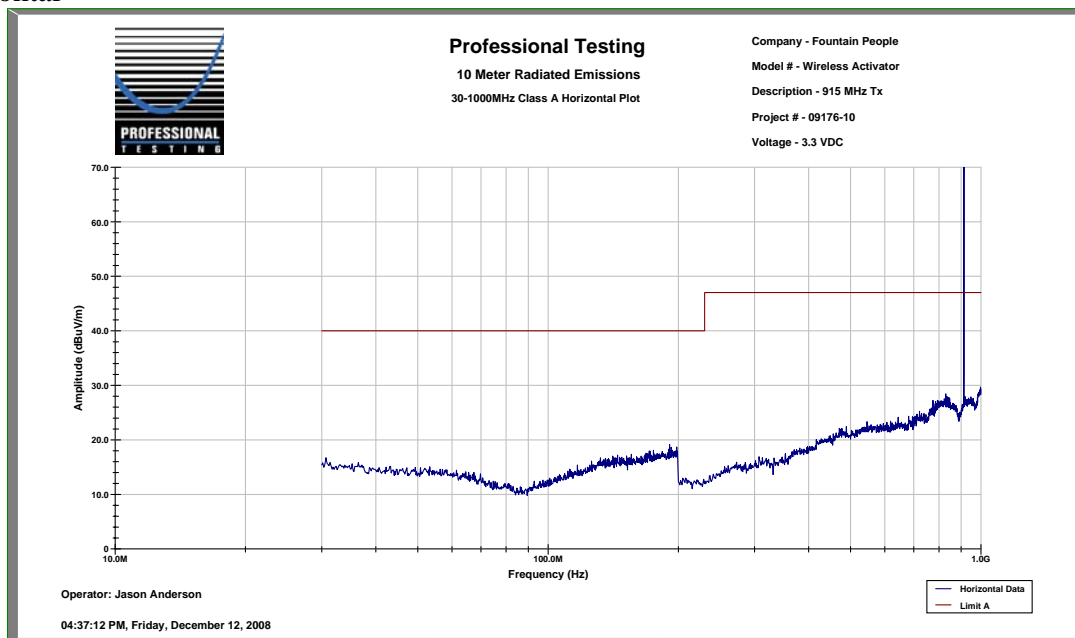
Note: Prescan performed at 10 meters. Final compliance data taken at 3 meters.

Radiated Data Sheet
Spurious Emissions Prescan
Fountain People, Inc.
Wireless Activator

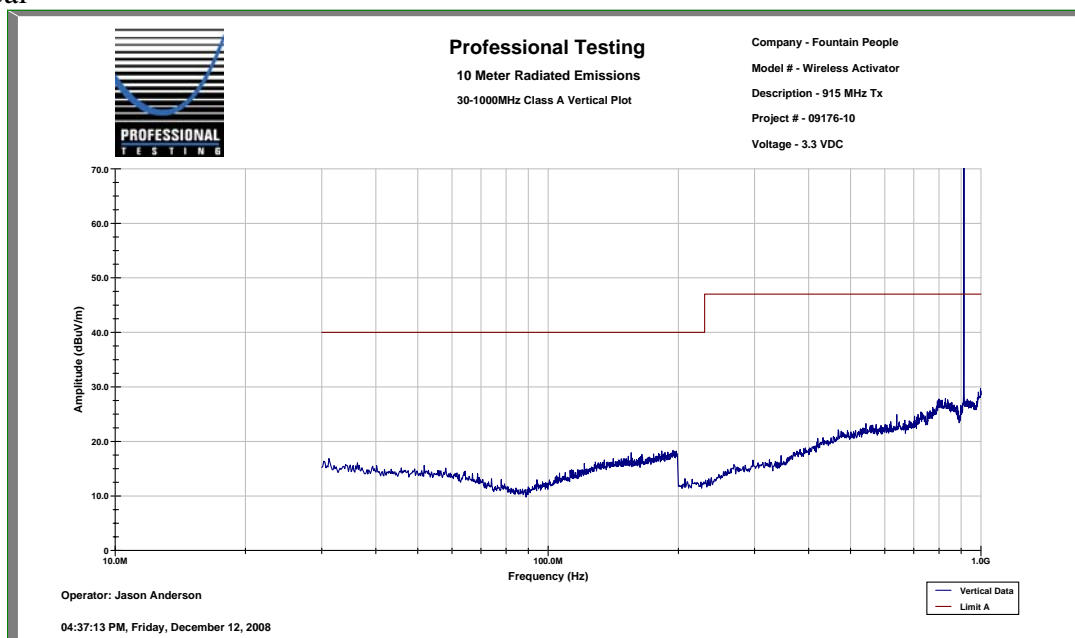
MEASUREMENT DISTANCE (m): 10
DETECTOR FUNCTION: Peak
RBW: CISPR 120 kHz
VBW: 1 MHz

DATE: December 12, 2008
PROJECT #: 09166-10

Horizontal



Vertical



Radiated Data Sheet
Spurious/Harmonics >1 GHz
Fountain People, Inc.
Wireless Activator

MEASUREMENT DISTANCE (m): 1
DETECTOR FUNCTION: Peak
RBW: 1 MHz
VBW: 1 MHz

DATE: December 12, 2008
PROJECT #: 09166-10

Vertical

| Frequency (MHz) | EUT Direction (degrees) | Antenna Elevation (Meters) | Recorded Level (dBuV) | Amplifier Gain (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Corrected Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Function |
|-----------------|-------------------------|----------------------------|-----------------------|---------------------|-----------------------|-----------------|--------------------------|----------------|-------------|-------------------|
| 1.83 | 180 | 1 | 71.2 | 40.2 | 27.6 | 2.9 | 61.5 | 63.5 | -2.0 | peak |
| 2.745 | 180 | 1 | 63.9 | 40.6 | 29.6 | 3.0 | 55.9 | 63.5 | -7.6 | peak |
| 3.66 | noise | floor | 47.9 | 40.7 | 32.3 | 3.3 | 42.7 | 63.5 | -20.8 | peak |
| 4.575 | noise | floor | 48.8 | 41.5 | 33.9 | 3.9 | 45.1 | 63.5 | -18.4 | peak |
| 5.49 | noise | floor | 49.1 | 42.3 | 34.8 | 4.7 | 46.3 | 63.5 | -17.2 | peak |
| 6.405 | noise | floor | 48.8 | 42.9 | 35.9 | 4.5 | 46.2 | 63.5 | -17.3 | peak |
| 7.32 | noise | floor | 48.8 | 42.5 | 37.3 | 5.1 | 48.7 | 63.5 | -14.8 | peak |
| 8.235 | noise | floor | 47.9 | 41.4 | 38.4 | 5.0 | 49.9 | 63.5 | -13.6 | peak |
| 9.15 | noise | floor | 47.4 | 40.5 | 38.0 | 4.9 | 49.8 | 63.5 | -13.7 | peak |

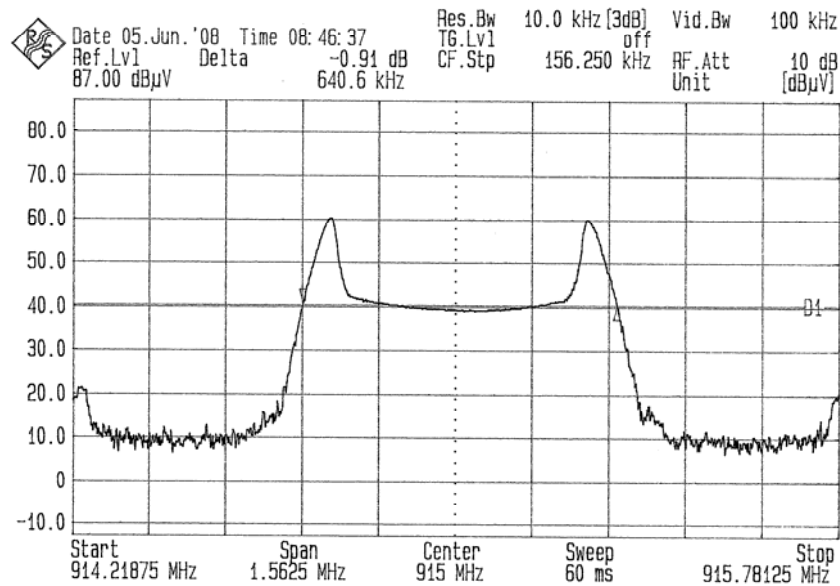
Horizontal

| Frequency (MHz) | EUT Direction (degrees) | Antenna Elevation (Meters) | Recorded Level (dBuV) | Amplifier Gain (dB) | Antenna Factor (dB/m) | Cable Loss (dB) | Corrected Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Function |
|-----------------|-------------------------|----------------------------|-----------------------|---------------------|-----------------------|-----------------|--------------------------|----------------|-------------|-------------------|
| 1.83 | 270 | 1 | 59.4 | 40.2 | 27.6 | 2.9 | 49.7 | 63.5 | -13.8 | peak |
| 2.745 | 360 | 1 | 63.9 | 40.6 | 29.6 | 3.0 | 55.9 | 63.5 | -7.6 | peak |
| 3.66 | noise | floor | 47.9 | 40.7 | 32.3 | 3.3 | 42.7 | 63.5 | -20.8 | peak |
| 4.575 | noise | floor | 48.8 | 41.5 | 33.9 | 3.9 | 45.1 | 63.5 | -18.4 | peak |
| 5.49 | noise | floor | 49.1 | 42.3 | 34.8 | 4.7 | 46.3 | 63.5 | -17.2 | peak |
| 6.405 | noise | floor | 48.8 | 42.9 | 35.9 | 4.5 | 46.2 | 63.5 | -17.3 | peak |
| 7.32 | noise | floor | 48.8 | 42.5 | 37.3 | 5.1 | 48.7 | 63.5 | -14.8 | peak |
| 8.235 | noise | floor | 47.9 | 41.4 | 38.4 | 5.0 | 49.9 | 63.5 | -13.6 | peak |
| 9.15 | noise | floor | 47.4 | 40.5 | 38.0 | 4.9 | 49.8 | 63.5 | -13.7 | peak |

Occupied Bandwidth Datasheet
Fountain People, Inc.
Wireless Activator

Test Date: December 12, 2008

20 dB Bandwidth



26 dB Bandwidth

